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Integrated approach in "Social research of science" as a methodological problem.

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Abstract

Sociology of scientific knowledge (SSK) is a study of science as a social activity, especially dealing with the social conditions and effects of science and with the social structures and processes of scientific activity. The theorists of Sociology of Scientific Knowledge consider sociological factors as influencing all beliefs in science. Sociology of Scientific Knowledge tends to the unity of the cognitive and social factors. This idea of integrity has to combine cognitive, methodological, historical and social approaches in scientific and cognitive activity. The integrated approach allows to consider science as a systematic and holistic object.

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1. Introduction

Since 1980, interest in developing philosophical accounts of scientific knowledge that incorporate the social dimensions of scientific practice has been on the increase. The most interesting and also the most troubling theoretical development of the last decade has been sociology of scientific knowledge – SSK.

Sociology of Scientific Knowledge has been framed by an explicitly of philosophical agenda – an agenda that aims to reject the traditional philosophical ideal of universal standards of rationality, objectivity and truth in favour of relativistic conception of scientific rationality, objectivity and truth that grounds these concepts, in the end, in local and particular social and cultural circumstances. All there ultimately is to the notions of rationality, objectivity and truth are local socio-cultural norms conventionally adopted and enforced by particular socio-cultural groups.

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2. The unity of the cognitive and social factors in Sociology of Scientific Knowledge

The development of Sociology of Scientific Knowledge gave impetus for microsociological researching of case studies that arise in the process of scientific cognitive activities. They provide valuable empirical data about the interconnection between cognitive and social aspects of science. There were a range of different conceptual schemes of social researches of science that made as the object of analysis the birth process of scientific knowledge in the context of the social community.

There are deep and significant tensions – between the idea that Sociology of Scientific Knowledge is an empirical scientific discipline, on the one hand, and its claim to solve the traditional problems of philosophy, on the other.

Sociology of Scientific Knowledge is intended to be a naturalistic, empirical, scientific enterprise. Indeed, it is by emphasizing precisely this that they rebut the common idea that Sociology of Scientific Knowledge is intended as some kind of rejection or "denigration" of science.

Accordingly, the naturalistic, rather than a prescriptive or normative orientation, it simply tries to understand the convictions and the concepts of different cultures as empirical phenomena. External evaluation of the convictions and concepts is irrelevant to this naturalistic concern; all that matters is why they were actually sustained. Knowledge is a sharp distinction between what is taken to be and what actually is. For SSK "knowledge" refers rather to " any collectively accepted system of beliefs" or to " whatever people take to be knowledge", those beliefs which people confidently hold and live by.

Similarly, whereas nothing is more basic to traditional philosophy, than "distinction between what is "true" and what is merely taken to be so. In SSK this distinction is definitively abounded. Truth is simply identified with "the body of local credible knowledge".

3. The strong program and major theorists in social research of science

Some of the strongest case for social, constructionism has been made by L. Fleck (1935) and T. Kuhn (1964) before the term was even coined. If the structure and content of scientific facts and objects are effected by social forces, then the traditional line between society and nature begins to become blurred. The Sociology of Scientific Knowledge try to explain the social processes that produce scientific belief. It attempts to open up the "black box" of the scientific method. The best known branch of Sociology of Scientific Knowledge is known as "the strong program". []"The strong program" particularly associated with David Bloor, Barry Barnes, Harry Collins (so – called Edinburgh relativism). They have illustrated how the existence of a scientific community, bound together by allegiance to a shared paradigm, is a prerequisite for normal scientific activity.

The strong program proposed that both "true" and "false" scientific theories should be treated the same way. Both are caused by social factors or conditions, such a cultural context and self-interest. All human knowledge, as something else exists in the human cognition must contain some social components in its formation process.

The most popular SSK programs are:

Karin Knorr-Cetina (Konstanz University, Germany) "social constructivism" and "epistemology" summarized in the books "The manufacturing of knowledge: an essay on the constructivist and contextual nature of science" (1981) and " How the science make knowledge".(1999).

"Relativist position" of Harry Collins (University of Bath, the UK). His best book is "The Golem: What everyone should know about science' (1993).

Ethnomethodology (Garfinkel, Woolgar S.) is a descriptive discipline. As a method, it is used in ethnographis studies to describe people's methods that they use in every day situation.

These ideas of sociology of scientific knowledge are widespread in Russia too. The following scientists working on these problems should also be mentioned: Lektorsky W. "Whether it is possible to combine realism and constructivism in epistemology?", Mamchur E. "Whether there will be autonomy ideal of scientific knowledge?", Kornienko A." Integrative tendencies in the philosophy of science. Search the foundations of the

general theory of science", Witchenko N. "Neoclassical theory of knowledge: the strategy case-study and methodology of constructivism", etc.

4. Social constructivism

A wide range of approaches in social and cultural studies of science has come under the umbrella label of "social constructivism." Both terms in the label are understood differently in different programs of research. While constructivists agree in holding that those factors treated as evidential, or as rationally justifying acceptance, should not be privileged at the expense of other causally relevant factors, they differ in their view of which factors are causal or worth examination. Macro-analytic approaches, such as those associated with the so-called Strong Programme in the Sociology of Scientific Knowledge, treat social relations as an external, independent variable and scientific judgment and content as a dependent variable. Micro-analyses or laboratory studies, on the other hand, abjure the implied separation of social context and scientific practice and focus on the social relations within scientific research programs and communities and on those that bind research-productive and research-receptive communities together.

Researchers also differ in the degree to which they treat the social and the cognitive dimensions of inquiry as independent or interactive. The researchers associated with the macro-analytic Strong Programme in the Sociology of Scientific Knowledge (Barry Barnes, David Bloor, Harry Collins, Donald MacKenzie, Andrew Pickering, Steve Shapin) were particularly interested in the role of large scale social phenomena, whether widely held social/political ideologies or group professional interests, on the settlement of scientific controversies. Some landmark studies in this genre include Andrew Pickering's (1984) study of competing professional interests in the interpretation of high energy particle physics experiments, and Steven Shapin and Simon Shaffer's (1985) study of the controversy between Robert Boyle and Thomas Hobbes about the proper interpretation of experiments with vacuum pumps.

The micro-sociological or laboratory studies approach features ethnographic study of particular research groups, tracing the myriad activities and interactions that eventuate in the production and acceptance of a scientific fact or datum. Karin Knorr Cetina's (1981) reports her year-long study of a plant science laboratory at UC Berkeley. Bruno Latour and Steven Woolgar's (1986) study of Roger Guillemin's neuroendocrinology laboratory at the Salk Institute is another classic in this genre. These scholars argued in subsequent work that their form of study showed that philosophical analyses of rationality, of evidence, of truth and knowledge, were irrelevant to understanding scientific knowledge. Sharon Traweek's (1988) comparative study of the cultures of Japanese and North American high energy physics communities pointed to the parallels between cosmology and social organization without making such extravagant and provocative epistemological claims. The efforts of philosophers of science to articulate norms of scientific reasoning and judgment were, to all these scholars, misdirected, because actual scientists relied on quite different kinds of considerations in the practice of science.

Most importantly the general academic culture has shown great interest in what has been done in this field. Unlike many others sociological specialties, SSK has strongly engaged the attention of historians and philosophers (e.g. Shapin 1962, Schaffer 1985, Fuller 1982, Toulmin 1990) and the boundary lines between what counts as historical or philosophical and what as sociological practise in the area have been blurred to the point of invisibility.

Meanwhile anthropologists, literary and feminist theoreticians and a loosely defined but trendy "cultural studies" community have been attracted in significant numbers to the study of science largely through work in SSK. The social study of science is one of the modern academy's most unremittingly interdisciplinary projects.

These programs were combined as social constructivists, because scientific knowledge is represented here as a result and consequence of the social construct. The most important message of these studies is the understanding of scientific reality as an artifact, as construct, that is formed in the stroke research.

These "extreme" claims have elicited much controversy. Some scientists have argued that constructivism represents a dangerous form of antiscientism (discussions of "science's wars").

Almost all programs have common parametric features including relativity, conventionalism and hypertrophied sociology.

5. Sociology of Scientific Knowledge as an integrated discipline

Sociology is being increasingly implemented into areas where previously the methodology of science and philosophy dominated. In fact we are talking about the expansion of sociology in these areas. Almost all research programs formed in Sociology of Scientific Knowledge changed the scientific criteria. Knowledge is considered to be a product of interpretive context.

Proponents (Latour, Callon, Law, Pickering, MacKenzie) criticise Sociology of Scientific Knowledge for sociological reductionism and a human centered universe. SSK, they say, relies too havity on human actors and social rules and conventions setting scientific controversies.

However, the debate with the cognitive sociology of knowledge appeared in the press shown weaknesses of this approach and invalidity of its claims to the general methodology, namely its subjectivity, one-side focus on linguistic methods etc. All attempts to eliminate from the sociology of science concepts of reliable scientific knowledge led to the dissolution of the object itself. Science loses its essential specifics, its special place in the culture, turns into a discussion club (demarcation problem).

6. Conclusion

This diversity of existing approaches in the sociology of science has a tendency to the integrative analysis of science as a holistic phenomenon. The prospect of this plant are seen in the creation of the sociology of science as an integrated discipline. Western European sociology and science programs tend to the synthesis of epistemology, sociology of science in its traditional interpretation and theory of science. A new research paradigm-ideal is formed, which is based on the unity of the cognitive and social factors.

But expanding significantly the field of social and cultural analysis of science SSK reduce at the same time the use of the methodology. The integrity of the object may only can be achieved through recognition the fundamental nature of both features: knowledge and activities of the society. It is a problem of combining different knowledge about a complex object. Methodological tool to achieve this synthesis is the idea of integrity that has to combine cognitive, methodological, historical and social approaches in scientific and cognitive activity.

The task of combining different knowledge relating to one complex object, difficult to implement, but it certainly is promising, as it will allow in the future move to a systematic and holistic levels of science research. And then science will receive an existential-anthropological and evolutionary-historical interpretation, while maintaining its logical-methodological nature.

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